Seneca C-A
All-in-one Converter box with Scaler

Revision 1.0.0, (February, 2013)

AVITECH

ABOUT THIS MANUAL
This manual contains information on using the Avitech Seneca C-A all-in-one converter. There are two chapters in this manual.

✓ **Getting Started**, introduces the features and specifications as well as external components of Seneca C-A.

✓ **System Configuration**, discusses the steps on using the LCD panel to set up Avitech Seneca C-A, as well as using the proprietary Avitech ScreenCrop utility.

Throughout the manual the following conventions are used to distinguish elements of text.

provides additional hints or information that requires special attention.

identifies warnings which must be strictly followed.

Any name of a menu, command, icon or button on the screen is shown in a bold typeset. For example: On the **Start** menu select **Settings**.

To assist us in making improvements to this user manual, we welcome any comments and constructive criticism. Email us at: sales@avitechvideo.com.

WARNING
Do not attempt to disassemble the Seneca all-in-one converter module. Doing so may void the warranty. There are no serviceable parts inside. Please refer all servicing to qualified personnel.

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1. Getting Started

The Seneca C-A all-in-one Converter box allows conversion of signal source from HDMI/DVI/VGA/ YPbPr/CVBS (NTSC/PAL) and SDI (3G/HD/SD) to HDMI/DVI/VGA and SDI (3G/HD/SD) output with scaling. A compact, stand-alone video converter, it is ideal for many professional video conversion applications, including video production, conferencing, presentation, OB vans, post-production, and television broadcasting. It provides automatic video input format detection, audio monitoring, supports a wide variety of video resolutions, and is capable of simultaneous output of VGA, DVI, HDMI, and SDI signals.

This chapter introduces the features and specifications as well as external components of Avitech Seneca C-A.

1.1 Package Contents

Avitech Seneca C-A	Utility Disc (software and user manual)
12 V DC 2.5 A Power Adapter	Magnetic Foot Stand with Screws (4 pcs)
DVI-I to VGA Adapter	DVI-I to YPbPr Adapter (optional)

Rack mount kit (optional)

Table 1-1 Package Contents

1.2 Product Features

The Seneca C-A is capable of converting and scaling signals to a high quality HDMI/DVI/VGA and SDI signals. It can sense the following input signals: HDMI/DVI/VGA/YPbPr/SDI(3G/HD/SD)/CVBS(NTSC/PAL) automatically, then convert and scale it to the user-defined HDMI/DVI/VGA and SDI signal. The Seneca is capable of simultaneous output of DVI, HDMI, and SDI signals with most resolutions.* It also features a **DVI-D LOOP OUT**** port for connection of an external display for monitoring of the signal entering the **DVI-I IN** port.

The Seneca C-A also supports area of interest cropping through its LCD interface and via a network connection. Additionally, Avitech's ScreenCrop utility** can monitor the broadcast output of all networked Seneca devices and supports multiple instances of area of interest cropping on the Seneca C-A.

For television broadcast application, the Seneca C-A supports set safe area graticules, genlock function (optional) with timing offset controls and analog stereo audio which can be embedded into the SDI/HDMI output with delay. The Seneca has audio monitoring through an $^1/_8$ inch stereo headphone jack (which supports up to 170ms of delay).

The LCD interface on the Seneca C-A displays its operational status and input signal information. The LCD interface also allows users to fully configure all the Seneca's settings.

📄 ** See the Output Resolution Table in the Appendix of this manual for a complete list of resolutions.*
** DVI-D loop out does not support analog source signals; VGA or YPbPr (through VGA or YPbPr to DVI adapter).
*** Image/video crop, aspect ratio, output resolution, device name and IP address adjustments are also supported by the Avitech ScreenCrop.
Note: To comply with HDCP license agreement, any source with HDCP will not be converted to SDI.

1.3   Specifications

Input	
SDI/CVBS **(BNC connector)**	Automatic sensing SDI (3G/HD/SD) CVBS (NTSC/PAL): ❖ *NTSC/PAL* ❖ *SD-SDI (SMPTE 259M): 525i60, 625i50* ❖ *HD-SDI (SMPTE 292M): 720p25, 720p29.97, 720p30, 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60* ❖ *3G-SDI (SMPTE 424M): 1080p23.98, 1080PsF24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60*
HDMI **(HDMI type A)**	Automatic sensing, the following input signals are supported: ❖ *640x480, 60Hz/75Hz* ❖ *720×400, 70Hz* ❖ *800x600, 50Hz/60Hz/75Hz* ❖ *1024x768, 50Hz/60Hz/75Hz* ❖ *1280x960, 50Hz/60Hz* ❖ *1280x1024, 50Hz/60Hz/75Hz* ❖ *1360x765, 50Hz/60Hz* ❖ *1400x1080, 50Hz/60Hz* ❖ *1600x1200, 50Hz/60Hz* ❖ *1680x1050, 50Hz/60Hz* ❖ *1920x1080, 50Hz/60Hz* ❖ *1920x1200, 50Hz/60Hz*
DVI-I **(DVI-I connector)**	Automatic sensing, the following input signals are supported: ❖ *640x480, 60Hz/75Hz* ❖ *720×400, 70Hz* ❖ *800x600, 50Hz/60Hz/75Hz* ❖ *1024x768, 50Hz/60Hz/75Hz* ❖ *1280x960, 50Hz/60Hz* ❖ *1280x1024, 50Hz/60Hz/75Hz* ❖ *1360x765, 50Hz/60Hz* ❖ *1400x1080, 50Hz/60Hz* ❖ *1600x1200, 50Hz/60Hz* ❖ *1680x1050, 50Hz/60Hz* ❖ *1920x1080, 50Hz/60Hz* ❖ *1920x1200, 50Hz/60Hz*
VGA/YPbPr **(via adapter)**	Automatic sensing, via adapter in DVI-I IN port; input signals supported: ❖ *800x600, 50Hz/60Hz* ❖ *1024x768, 50Hz/60Hz* ❖ *1280x960, 50Hz/60Hz* ❖ *1280x1024, 50Hz/60Hz* ❖ *1360x765, 50Hz/60Hz* ❖ *1400x1080, 50Hz/60Hz* ❖ *1600x1200, 50Hz/60Hz* ❖ *1680x1050, 50Hz/60Hz* ❖ *1920x1080, 50Hz/60Hz* ❖ *1920x1200, 50Hz/60Hz* *If the refresh rate is other than 60Hz, the image could become out of alignment. In the case, use the "VGA Adjustment" feature to realign.* **H START**, **V START**, **WIDTH**, **HEIGHT**, *and* **H TOTAL** *(through LCD interface).*
Genlock **(BNC connector)**	Frame synchronizer (Ref IN port) <u>Note</u>: For model without genlock feature, this port is not available
Audio **(Phono jack)**	Analog audio (AUDIO IN port, stereo) AES/EBU (embedded)

Input	
Ethernet (RJ45 connector)	For using Avitech ScreenCrop utility or performing advanced operations (IP port)

Output	
SDI (BNC connector)	User Configurable (support SMPTE 259M, 292M, and 424M at YCbCr 4:2:2/4:4:4 or RGB 4:4:4, 10-bit): ❖ *SD-SDI: 487i59.94, 576i50* ❖ *HD-SDI: 720p23.98, 720p24, 720p25, 720p29.97, 720p30, 720p50, 720p59.94, 720p60, 1080i23.98PsF, 1080i24PsF, 1080i50, 1080i59.94, 1080i60* ❖ *3G-SDI: 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94 1080p60* SDI Embedded Audio (SDI OUT port) Note: For models without the genlock feature (no **Ref IN** port); the following refresh rates are not supported 23.98, 29.97 and 59.94Hz.
HDMI (HDMI type A)	User selectable: ❖ *800x600, 50Hz/60Hz/75Hz* ❖ *1024x768, 50Hz/60Hz/75Hz* ❖ *1280x720, 50Hz/60Hz/75Hz* ❖ *1280x768, 50Hz/60Hz/75Hz* ❖ *1280x1024, 50Hz/60Hz/75Hz* ❖ *1360x768, 50Hz/60Hz/75Hz* ❖ *1400x1050, 50Hz/60Hz/75Hz* ❖ *1440x900, 50Hz/60Hz/75Hz* ❖ *1600x1200, 50Hz/60Hz/75Hz* ❖ *1680x1050,50Hz/60Hz/75Hz* ❖ *1920x1080, 50Hz/60Hz*
DVI-I (DVI-I connector)	User selectable: ❖ *640x480, 60Hz* ❖ *800x600, 50Hz/60Hz/75Hz* ❖ *1024x768, 50Hz/60Hz/75Hz* ❖ *1280x720, 50Hz/60Hz/75Hz* ❖ *1280x768, 50Hz/60Hz/75Hz* ❖ *1280x1024, 50Hz/60Hz/75Hz* ❖ *1360x768, 50Hz/60Hz/75Hz* ❖ *1400x1050, 50Hz/60Hz/75Hz* ❖ *1440x900, 50Hz/60Hz/75Hz* ❖ *1600x1200, 50Hz/60Hz/75Hz* ❖ *1680x1050,50Hz/60Hz/75Hz* ❖ *1920x1080, 50Hz/60Hz* ❖ *1920x1200, 50Hz/60Hz*
DVI-D Loopout (DVI-D connector)	Looping output of the DVI-I input (non-configurable and not available for VGA or YPbPr signal through DVI adapter): ❖ *640x480, 60Hz/75Hz* ❖ *720x400, 70Hz* ❖ *800x600, 50Hz/60Hz/75Hz* ❖ *1024x768, 50Hz/60Hz/75Hz* ❖ *1280x960, 50Hz/60Hz* ❖ *1280x1024, 50Hz/60Hz/75Hz* ❖ *1360x765, 50Hz/60Hz* ❖ *1400x1080, 50Hz/60Hz* ❖ *1600x1200, 50Hz/60Hz* ❖ *1680x1050, 50Hz/60Hz* ❖ *1920x1080, 50Hz/60Hz* ❖ *1920x1200, 50Hz/60Hz*

Output	
Audio (Headphone jack)	Analog Audio (audio out port) Stereo

Others	
Power	Power consumption is 15 W maximum Power Supply: ❖ *Input (AC): 100 to 250 V* ❖ *Output (DC): 12 V adapter*
Dimension/Weight	Dimension, 174×172×43 mm (6.85×6.77×1.69 inch) Weight, 740 g (1.63 lb)
Environment/ Safety	Temperature: ❖ *Operating: 0 ℃ (32 ℉) to 40 ℃ (104 ℉)* ❖ *Storage: –10 ℃ (–4 ℉) to 50 ℃ (122 ℉)* Humidity, 0% to 80% relative, non-condensing Safety, FCC/CE/C-Tick/Class A

Table 1-2 Specifications
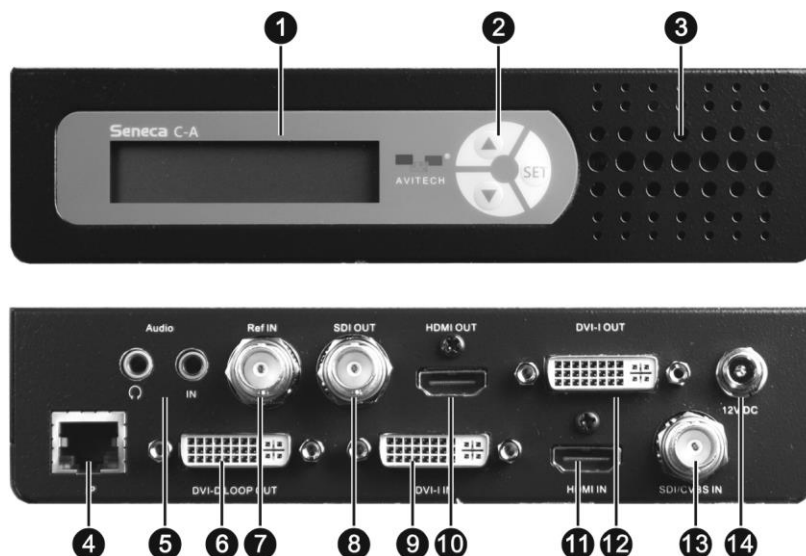
1.4   Connections to the Seneca C-A

Figure 1-1 Seneca C-A Components

Front Panel	
❶ **LCD Panel**	For displaying the configuration and control parameters
❷ **Control Buttons**	▲ Go to previous selection ▼ Go to next selection SET Enter next menu level or select item
❸ **System Fan**	Contains the system fan*

Rear Panel	
❹ **Ethernet (IP)**	For controlling the Seneca C-A through a network connection. (use with Avitech's ScreenCrop utility)

❺ **Audio In/Out**	❖ 🎧
	   Connects to the green connector for headphone function (stereo)
	❖ **IN**
	   Connects to the pink connector for analog audio input

❻ **DVI-D LOOP OUT**	DVI connector for DVI video out loop (output signal coming from DVI-I IN port only)** <u>Note</u>: Often used for preview when the connected desktop computer is only capable of supporting a single display output
❼ **Ref IN**	Multi-format sync reference input (YPbPr/NTSC/PAL) for genlock function (frame synchronizer) <u>Note</u>: For models without the genlock feature, this port is not available.
❽ **SDI OUT**	BNC connector supports SDI (3G/HD/SD) signal output
❾ **DVI-I IN**	DVI connector for DVI/VGA/YPbPr input sources (a DVI to VGA adapter or DVI to YPbPr adapter may be required)
❿ **HDMI OUT**	Connect to the monitor's HDMI signal cable***
⓫ **HDMI IN**	HDMI connector for HDMI input source****
⓬ **DVI-I OUT**	Connect to the monitor's DVI/VGA (via adapter) signal cable
⓭ **SDI/CVBS IN**	BNC connector for SDI (3G/HD/SD) CVBS (NTSC/PAL) video input sources
⓮ **Power (DC 12V)**	Connects to the 12 V DC power adapter

Table 1-3 Seneca C-A Component Description

Do not cover or block the ventilation openings.

** DVI-D loop out does not support analog source signals; VGA or YPbPr (through VGA or YPbPr to DVI adapter).

**** Embedded audio is **not** available with the following input formats.*

1. *YCbCr 4:4:4 – 1080p(24/23.98)PsF and 720p(30/29.97)Hz*
2. *RGB 4:4:4 – 1080p(24/23.98)PsF and 720p(30/29.97)Hz*

**** To comply with HDCP license agreement, any source with HDCP will not be converted to SDI.

2. System Configuration

This chapter discusses the process of using the LCD panel to set up Seneca C-A, as well as using the Avitech ScreenCrop utility.

2.1 Using the LCD Panel

The LCD panel allows for control of the Seneca C-A including; input/output signal adjustment, video crop, keying/overlay, aspect ratio adjustment and operational status report.
The LCD panel consists of 3 buttons:

▲   Go to previous selection (up arrow button)
▼   Go to next selection (down arrow button)
SET   Enter the next level of a menu, or select the currently highlighted item.

Figure 2-1 LCD Panel: Busy State

⚠ *1. When the busy state "**PLEASE WAIT . . . .**" message is displayed on the LCD panel (see sample screen above), **DO NOT** disconnect or connect any signal cables as, a fault may occur.*
*2. Also, **DO NOT** change any of the incoming signal's display resolutions while the Seneca C-A is in the busy state.*

2.1.1 Welcome Screen

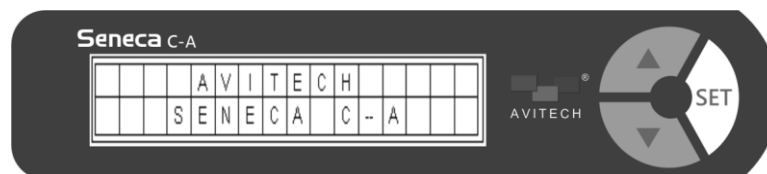Upon starting up the LCD panel, the welcome screen is shown for about 15 seconds.

Figure 2-2 LCD Panel: Welcome Screen

Then the following default screen is displayed.

Figure 2-3 LCD Panel: Default Initial Screen

📄 *This screen displays the unit's default settings.*
*1. First line (video): **AUTO**matically selects the input signal in the following order (firstly CVBS, SDI, YPbPr, VGA, DVI, and lastly HDMI) when more than one signal type is detected.*
*Then, outputs it at **1080P @ 60**Hz.*
*Note: Due to the screen display size constraint, (**A**:AUTO, **H**:HDMI, **V**:VGA, **Y**:YPbPr, **S**:SDI, **D**:DVI).*
*2. Second line (audio): The default audio signal source is set at "Follow Video" (e.g., **HDMI**). The audio feature allows the selection of audio signal source (Follow Video, HDMI, SDI, LINE IN). By default the audio delay is set to: **0** (no audio delay) the Seneca supports up 170ms of delay.*

⚠ *Settings made through the LCD panel will be saved automatically upon turning off power to the Seneca.*

2.1.2 Navigating the Main Menu

1. Press the SET button from the default initial screen to enter the main menu.
2. Use the buttons on the front panel to navigate: (▲ / ▼ / SET)
3. The following sections are setup items on the main menu, details of each are in the following tables, respectively:

Input Port	
Autoscan	**On**: enable the signal automatic detection feature. **Off**: select the signal manually. ❖ *Source:* ✓ *HDMI* ✓ *DVI* ✓ *VGA* ✓ *YPbPr* ✓ *SDI*
Exit	Exit the input signal setup menu.

Table 2-1 Input Port

⚠ *Make sure to select the correct signal type based on actual connected input signal to Seneca C-A to avoid image display problems (e.g., noise, flicker, etc.).*

Output Port	
SDI	**On**: enable the SDI out feature. **Off**: disable the SDI out feature.
Standard	**SMPTE**: select this for SDI output. **VESA**: select this for HDMI/DVI/VGA output.
Output Timing	For SMPTE standard, select the following output signal. ❖ *1080p @ 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (Hz)* ❖ *1080i @ 23.98 PsF, 24 PsF, 50, 59.94, 60 (Hz)* ❖ *720p @ 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (Hz)* ❖ *SD_625 (576i @ 50 Hz)* ❖ *SD_525 (487i @ 59.94 Hz)* For VESA standard, select the following output signal. ❖ *1920x1200 @ 50, 60 (Hz)* ❖ *1920x1080 @ 50, 60 (Hz)* ❖ *1680x1050 @ 50, 60, 75 (Hz)* ❖ *1600x1200 @ 50, 60, 75 (Hz)* ❖ *1440x900 @ 50, 60, 75 (Hz)* ❖ *1400x1050 @ 50, 60, 75 (Hz)* ❖ *1360x768 @ 50, 60, 75 (Hz)* ❖ *1280x1024 @ 50, 60, 75 (Hz)* ❖ *1280x768 @ 50, 60, 75 (Hz)* ❖ *1280x720 @ 50, 60, 75 (Hz)* ❖ *1024x768 @ 50, 60, 75 (Hz)* ❖ *800x600 @ 50, 60, 75 (Hz)* ❖ *640x480 @ 60 (Hz)* <u>Note</u>: For models without the genlock feature (no **Ref IN** port); 23.98, 29.97 and 59.94Hz refresh rates are **not** supported.
Exit	Exit the output signal setup menu.

Table 2-2 Output Port

Map Structure	
Status	Select the desired "sampling structure/pixel depth" based on output signal's "image format" and "frame/field rate." ❖ *YCbCr422* ❖ *YCbCr444* ❖ *RGB444*
Exit	Exit the map structure setup menu.

Table 2-3 Map Structure

1. *Embedded audio is __not__ available with the YCbCr444 and RGB444 output formats.*
2. *Map structure is not available when "OUTPUT PORT"→"STANDARD"→ is set at "VESA."*
3. *Map structure is locked at YCbCr422 when output resolution is at SD_525, SD_625, 1080p@50, 1080p@59.94, 1080p@60 (Hz).*

OSD (on screen display)	
Color Bar	**On**: enable the color bar and pattern select feature. The color bar can only be turned on when there is no input signal (default setting is **OFF**). ❖ *COLOR BAR* ❖ *2×2 CROSSHATCH* **Off**: disable the display of the color bar.
Exit	Exit the OSD setup menu.

Table 2-4 OSD

1. *The **COLOR BAR** settings are __not__ saved.*
2. *The color bar feature is a pattern generator for showing a signal when there is no source. It can be utilized as test pattern (input signal) for self testing or other devices verification.*

Image Adjustment	
Status	The input port currently selected is displayed as follows, (*Input Port: VGA, Input Port: CVBS, etc.)* If the selected input is digital such as SDI, DVI, or HDMI then this portion of image adjustment menu is **not** available. With digital signals use the *(Image Adjustment / Parameter)* portion of the menu. When the selected input signal **is** VGA, CVBS, or YPbPr, the following image adjustment settings are available. ❖ *Auto-detect (firstly CVBS, SDI, YPbPr, VGA, DVI, and lastly HDMI)* ❖ *VGA Adjustment: this feature was designed to adjust analog VGA signal with misalignment or color-off due to long cabling situation.* <u>Note</u>: *Only available when the signal is VGA.* ✓ *DEFAULT* ✓ *HSTART (horizontal starting position)* ✓ *WIDTH (horizontal "active area")* ✓ *VSTART (vertical starting position)* ✓ *HEIGHT (vertical "active area")* ✓ *HTOTAL (horizontal total) ****(refer figure 2-4)* *Make sure that the values of HSTART plus WIDTH do not exceed HTOTAL.* <u>Note</u>: *V TOTAL: (vertical total) ****(refer figure 2-4)* *This value is based on the values of VSTART plus HEIGHT. (Must not exceed the pre-determined value for V Total).* ✓ *REDGAIN* ✓ *GREENGAIN* ✓ *BLUEGAIN* ✓ *AUTO ADJUST (performs automatic alignment of VGA image inside the window)*

✓ **AUTO GAIN** *(performs automatic gain adjustment by correcting the color values)*

❖ **CVBS/YPbPr Adjustment**: *this feature was designed to adjust CVBS or YPbPr signal with misalignment or color-off due to long cabling situation.*
Note: Only available when the signal is CVBS or YPbPr.

✓ **DEFAULT**
✓ **HSTART** *(horizontal starting position)*
✓ **WIDTH** *(horizontal "active area")*
✓ **VSTART** *(vertical starting position)*
✓ **HEIGHT** *(vertical "active area")*
✓ **HTOTAL** *(horizontal total) ****(refer figure 2-4)*
*Make sure that the values of **H START** plus **WIDTH** do not exceed **HTOTAL**.*
*Note: V TOTAL: (vertical total) ****(refer figure 2-4)*
*This value is based on the values of **VSTART** plus **HEIGHT**. (Must not exceed the pre-determined value for V Total).*

❖ **Parameter**:
✓ **BRIGHTNESS**
✓ **CONTRAST**
✓ **SHARPNESS**
✓ **SATURATION** *(Only available when signal is non-RGB; or HDMI YCbCr422 / interlaced. In short, it can only be set for YUV color space.)*
✓ **HUE** *(only available when signal is non-RGB; or HDMI YCbCr422 / interlaced. In short, it can only be set for YUV color space.)*
✓ **DEFAULT**

Exit	Exit the image adjustment setup menu.

Table 2-5 Image Adjustment

1. *Image misalignment is most likely to occur for VGA signal in the 50Hz timing frequency range as well as the not so commonly used resolution in the 60Hz timing frequency range.*
   a) *When switching between VGA resolution signals that have timing frequency (horizontal and vertical frequency, vertical total) that are very near each other, image misalignment may occur.*
   b) *e.g., 1280×1024 60Hz change to 1400×1050 60Hz (adjust HSTART/VSTART/WIDTH/HEIGHT) back to 1280×1024 60Hz (since the timing frequency is very near that of 1400×1050 60Hz, then adjust HSTART/VSTART/WIDTH/HEIGHT for 1280×1024 60Hz again).*
2. *Depending on the signal type, **SATURATION** and **HUE** can only be set for YUV color space.*
   a) *YUV is a color space typically used as part of a color image pipeline. It encodes a color image or video taking human perception into account, allowing reduced bandwidth for chrominance components, thereby typically enabling transmission errors or compression artifacts to be more efficiently masked by the human perception than using a "direct" RGB-representation.*
   b) *When HDMI signal is transmitting under YCbCr422 color space (set from HDMI device itself), Seneca C-A will enable the **SATURATION** and **HUE** function in **IMAGE PARAMETER** menu. If it is under YCbCr444 color space, the above functions will be disabled.*
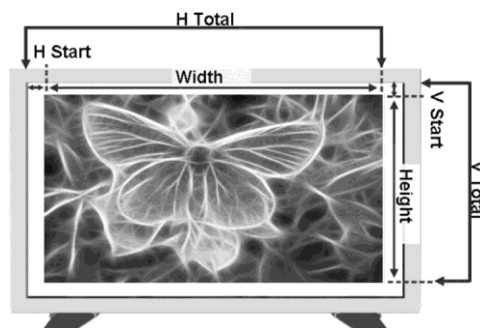

Figure 2-4 H-Start, Width, H-Total, V-Start, Height, V-Total

Crop Image	
Status	**On**: adjust the crop area and location. ❖ *LEFT: set the horizontal starting point.* ❖ *TOP: set the vertical starting point.* ❖ *RIGHT: set the horizontal ending point.* ❖ *BOTTOM: set the vertical ending point.* ❖ *DEFAULT* **Off**: disable the crop image feature.
Exit	Exit the crop image setup menu.

Table 2-6 Crop Image

*1. This feature will be **OFF** when **KEYING** feature is enabled.*
*2. Make sure the difference in value for **LEFT** compared to the **RIGHT** is not less than 20% (e.g., **LEFT** = **80.0% RIGHT** = **100.0%**). Likewise, the difference in value for **TOP** compared to the **BOTTOM** must not be less than 20% (e.g., **TOP** = **80.0% BOTTOM** = **100.0%**). To put it simply, the smallest valid crop size is 20% the total height by 20% the total width.*

Aspect Ratio	
Status	**On**: set the display's aspect ratio. ❖ *4:3* ❖ *16:9* ❖ *AUTO* ❖ *CUSTOM* *1 to 20 for width ratio : 1 to 20 for height ratio.* **Off**: disable the aspect ratio detect feature.
Exit	Exit the aspect ratio setup menu.

Table 2-7 Aspect Ratio

*1. This feature will be **OFF** when **KEYING** feature is enabled.*
2. When the width is greater than the height, then the width must be less than 6 times the value of the height. (6:1 ratio)
3. Likewise, when the height is greater than the width, then the height must be less than 6 times the value of the width. (1:6 ratio)

Keying (Overlay)	
Status	**On**: superimpose the inputted computer image on top of an existing video signal. This feature works best with green screens and virtual sets. ❖ *CROP IMAGE: set the crop area parameters.* ❖ *OUTPUT WINDOW: set output video range.* ❖ *BACKGROUND COLOR: set background color range (RGB)* ❖ *DEFAULT* **Off**: disable the keying feature.
Exit	Exit the keying setup menu.

Table 2-8 Keying

*1. This feature will be **OFF** when **CROP IMAGE** or **ASPECT RATIO** feature is enabled.*
*2. Make sure that **KEYING** is disabled (**OFF**) before running the Avitech ScreenCrop utility.*

Color Correct(ion)	
Status	**On**: enable the color correction feature. **Off**: disable the color correction feature.
Exit	Exit the color correction setup menu.

Table 2-9 Color Correction

1. *This function is applicable for 1080p input signal only.*
2. *When the Seneca C-A (SDI OUT) is connected to the Seneca C-SHS (SDI IN), make sure that the* **COLOR CORRECT** *function is enabled (set* **ON***) in the Seneca C-A and the Seneca C-SHS's is disabled (set* **OFF***) to allow the embedded color corrected signal to pass through.*

Genlock	
Status	**On**: this feature in Seneca C-A synchronizes the video sources (**DVI-I IN**, **SDI/CVBS IN**, and **HDMI IN** port's signal synchronized with **Ref IN** port signal). ❖ *GENLOCK OUTPUT: refer to table 2-11 for more details on supported output standard.* ❖ *TIMING OFFSET: set the delay lines.* ✓ *for SD 525 signal up to 524 delay lines* ✓ *for SD 625 signal up to 624 delay lines* ✓ *for 720p signal up to 749 delay lines* ✓ *for 1080p or 1080i signal up to 1124 delay lines* **Off**: disable the genlock feature.
Exit	Exit the genlock setup menu.

Table 2-10 Genlock

1. *For models without the genlock feature, this item is not available for setting.*
2. *Genlock feature is not available when "OUTPUT PORT"→"STANDARD"→ is set at "VESA."*
3. *The genlock feature requires a sync reference signal to enter the Ref IN port. Changing, or disconnecting the sync reference will cause the Seneca to automatically turn* **off** *genlock.*

Reference Input Standard	Selected SDI Output Standard																						
	525	625	720p60	720p59.94	720p50	720p30	720p29.97	720p25	720p24	720p23.98	1080i60	1080i59.94	1080i50	1080p60	1080p59.94	1080p50	1080p30	1080p29.97	1080p25	1080p24	1080p23.98	1080psf24	1080psf23
525	✔			✔								✔			✔								
625		✔			✔								✔			✔							
480p59.94				✔								✔			✔								
576p50					✔								✔			✔							
720p60			✔								✔			✔									
720p59.94	✔			✔								✔			✔								
720p50		✔			✔								✔			✔							
720p30		✔				✔					✔			✔			✔						
720p29.97	✔			✔			✔					✔			✔			✔					
720p25		✔			✔			✔					✔			✔			✔				
720p24									✔											✔		✔	
720p23.98										✔											✔		✔
1080p60			✔								✔			✔									
1080p59.94	✔			✔								✔			✔								
1080p50		✔			✔								✔			✔							
1080p30		✔				✔					✔			✔			✔						
1080p29.97	✔			✔			✔					✔			✔			✔					
1080p25		✔			✔			✔					✔			✔			✔				
1080p24									✔											✔		✔	
1080p23.98										✔											✔		✔
1080i60			✔								✔			✔									
1080i59.94	✔			✔								✔			✔								
1080i50		✔			✔								✔			✔							
1080psf24																						✔	
1080psf23																							✔

Table 2-11 Genlock Output

Headphone	

Status	**Enable**: listen to the audio output via headphones.
	❖ *SOURCE: select from the available 4 source channels.*
	   ✓ *CH1, CH2, CH3, CH4*
	❖ *MIX MODE: select the left/right/both channels.*
	   ✓ *LCH, RCH, R/L*
	❖ *VOLUME: adjust the volume.*
	   ✓ *1 up to 127 (level).*

Exit	Exit the headphone setup menu.

Table 2-12 Headphone

Audio	

Status	**On**: enable the audio output.
	❖ *SOURCE: select the audio source.*
	   ✓ *HDMI*
	   ✓ *LINE IN*
	   ✓ *SDI*
	❖ *DELAY: set the delay times.*
	   ✓ *0 to 170ms, sample rate at 48kHz.*
	❖ *FOLLOW VIDEO: enable (On) auto switching of audio source to selected video source.*
	Off: disable the audio output.

Exit	Exit the audio setup menu.

Table 2-13 Audio

Setup	
Backlight	**On**: enable the LCD panel's backlight. **Off**: disable the LCD panel's backlight.
Contrast	To set the LCD panel's contrast from **0** to **16**.
Idle Time	**On**: scrolling text (conversion format and related frame rate) will appear when the LCD panel of Seneca C-A is idle. ❖ *15 mins* ❖ *30 mins* ❖ *45 mins* ❖ *60 mins* **Off**: disable the scrolling text feature.
Reset	**On**: reset to default setting, system reboot is required. **Off**: present setting.
BIOS Version	Show the current firmware version for reference.
IP Address	Allow user to modify the **IP ADDRESS**, **SUBNET MASK**, and **GATEWAY** based on their Ethernet environment.
Exit	Exit the setup menu.

Table 2-14 Setup

2.2 Using the Avitech ScreenCrop Utility

⚠️ *1. This utility can be used with the Windows operating system only.*
*2. This utility's cropping feature cannot be used when **KEYING** is enabled (status: **ON**) in the LCD panel.*

📄 ***For ScreenCrop to display correctly:***

*1. When using a computer that does not support dual displays, make sure to use a DVI cable (or a HDMI cable with a HDMI-to-DVI® adapter) to allow the signal to enter **DVI-I IN** port of Seneca. Then connect the external monitor to the **DVI-D LOOP OUT** port of the Seneca.*
2. When using a computer with a built in monitor such as; (a laptop, or an all-in-one computer) or when using a computer that supports dual display outputs then you can connect via the **HDMI IN** port.*

* One of the outputs connects to Seneca C-A and the other connects to monitor.

The Seneca C-A comes with a windows based user interface called ScreenCrop. Avitech's ScreenCrop utility is intuitive and hosts several powerful tools including:

- ✓ *Live Pan Preview*
- ✓ *Area of Interest Cropping. (supports 2 instances)*
- ✓ *Cropped-area scaling*
- ✓ *Easy adjustment of the output resolution and timing*
- ✓ *The ability to control up to 153 Seneca's via network connection*

With ScreenCrop utility:

- ✓ *Get Microsoft PowerPoint presentations and other computer-based content to air.*
- ✓ *Select and scale a YouTube window to fit any broadcast output resolution.*
- ✓ *Crop out extraneous interface toolbars and broadcast clean Google Earth maps.*
- ✓ *Output any video stream playing on any media player such as; QuickTime, VLC, or Windows Media Player.*

2.2.1 ScreenCrop Utility Control Panel
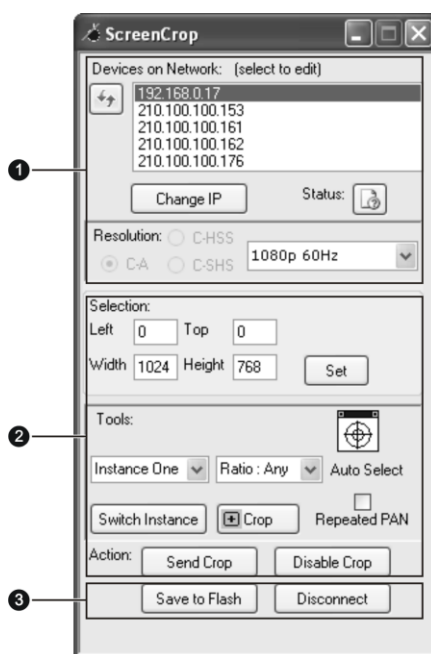
Figure 2-5 ScreenCrop Utility Control Panel

Status Information (1)

Devices on Network	Display all detected Avitech Seneca Converters in the same network mask. The status button 🔲 will become active (not grayed-out) when Seneca C-A / C-HSS / C-SHS is selected from the Devices on Network window.
IP List Refresh Button	Click IP list refresh button 🔲 to update the connected Avitech devices' IP addresses in the same network mask.
Change IP	Change the IP address of selected Seneca C-A / C-HSS / C-SHS.
Status Button	🔲 View the selected Seneca C-A / C-HSS / C-SHS operational status.
C-A / C-HSS / C-SHS	This displays what type of Seneca converter is currently connected.
Output Resolution	For configuring the specific output resolution and related frame rate.

Cropping Feature (2)

Left/Top/Width/ Height	Display and adjust the cropped instance's size and related location.
Set	After entering/adjusting the **Left**/**Top**/**Width**/**Height** parameters, click this button to update the location of the four green cropping corners.
Instance	Select between two different area of interest instances (**Instance One** or **Two**) and then set the cropping parameters.
Switch Instance	If both **Instance One** and **Instance Two** cropping parameters have been set, then clicking the **Switch Instance** button will toggle between the two instances and automatically output the cropping parameters.
Ratio	Select a fixed (**1:1**, **3:2**, **4:3**, **5:4**, **16:9**) aspect ratio or non-fixed (**Any**) aspect ratio for the area of interest selector.
Crop	Click this button and drag the cursor to crop an area. Upon releasing left mouse button, four green cropping corners are displayed signifying the area just selected (area of interest).
Auto Select	⊕ Automatically select a window/object to be cropped by positioning the **Crosshair** on the desired window/object. ❖ For example, auto-select a YouTube window or a Google Map.
Repeated Pan	Enable the pan feature for cropped instance (pan anywhere).
Send Crop	Send the cropped instance to selected Seneca C-A.
Disable Crop	Disable the cropping.

📄 *Cropping feature is only available on Seneca C-A / C-HSS.*

Others (3)

Save to Flash	Save the current ScreenCrop session's parameter to flash memory of Seneca C-A. The settings can be automatically loaded on next ScreenCrop session.
Disconnect	Terminate the connection of selected Seneca C-A / C-HSS / C-SHS.

Table 2-15 ScreenCrop Utility Control Panel Description

📄 *The Seneca C-A's sister device, the Seneca C-SHS, has different features and only has limited support of the ScreenCrop utility. It only supports: **status**, **change output resolution** and **change IP**.*

2.2.2 Using the ScreenCrop Utility

📄 *Before using the ScreenCrop utility to control Seneca C-A, it needs to be set in the same network mask with the connected computer. Please refer to the "Appendix" for further details on setting up the network mask.*

To use the ScreenCrop utility, perform the following steps:

Step 1. Copy the three ScreenCrop utility system files to the computer.

Step 2. Double-click **ScreenCrop.exe**. *In case an alert screen appears, click* **Unblock** *to continue.*

📄 *Windows Security Alert screen may appear upon using ScreenCrop utility for the first time on the computer. Click* **Unblock***, and the Windows Alert will not appear on subsequent uses of ScreenCrop.*

2.2.3 Status Information

ScreenCrop utility allows for easy monitoring of all networked Seneca devices. With 2 clicks of the mouse you can have the operational status of any of the Seneca converters that are on your network.

Step 1. Click to select the desired IP address from the Devices on Network window. This will connect you to that particular Seneca device.

    ✓   *The "Status" button will be enabled and the radio button for Seneca C-A or Seneca C-HSS or Seneca C-SHS would be faintly highlighted.*

Step 2. Click the "Status" button and a popup window will display detailed information about that device's operational status and broadcast output.

    ✓   *Display the Seneca converter's status information such as input signal type, output resolution and related frame rate, audio source, color correction on/off, sampling, pixel depth, genlock on/off (optional); and input timing such as horizontal/vertical frequency, vertical total lines, horizontal total/start pixel, and vertical start line.*
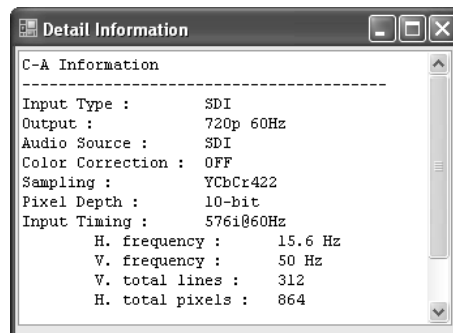

Figure 2-6 Detailed Information of Connected Seneca C-A

2.2.4 Cropping Feature

ScreenCrop utility allows the setting of 2 instances of an "area of interest" which can then transmit the associated contents to the intended audiences. For area of interest cropping perform the following steps.

Step 1. *Click the **Crop** button and use the cursor to select an area to crop. Upon releasing left mouse button, four green cropping corners are displayed signifying the area just selected.*

✓ *A floating 5× magnifying window shows any nearby graphics at 5x and relevant cursor information (e.g., position and RGB value).*

Figure 2-7 Magnified Floating Window Showing Cursor and RGB Value

✓ *Drag on any of the four green cropping corners to enlarge/reduce the area just selected. Or, use the keyboard's top/left/right/down buttons to fine-tune the scope of the area to be cropped without lifting the mouse button.*

✓ *For fine tuning, enter the values of the **Left/Top/Width/Height** manually and click the **Set** button. This will modify the scope of area to be cropped with pixel level accuracy.*

1. *When cropping, the **Left/Top** position, **Width**, and **Height** are calculated based on the module's input display size. The value for **Width** and **Height** must be greater than 20% of the panel width and panel height.*
   ✓ *For example, if the module's input display timing is 1280×1024 @ 60Hz, then the panel width is 1280 and the panel height is 1024. The cropped window size must be greater than 256 (20% of 1280) × 204 (20% of 1024).*
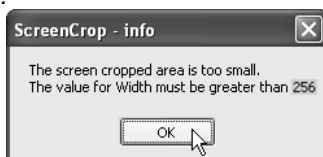
2. *Depending on the display resolution, a minimal change in the cropping parameters (**Left/Top/Width/ Height**) might not produce any noticeable effect.*
3. *It is highly recommended to set the displayed image to fill up the whole screen of monitor to prevent black bar(s) from appearing after cropping.*

Step 2. *Then click the **Send Crop** button to send the cropped image to the Seneca C-A to be displayed from all of its outputs <u>except</u> the DVI Loop Out.*

*Due to the image scaling method of the different graphics cards in the market, a pixel or more of any of the four green corner's residue may be left on the screen. Adjust the value of **Left/Top/Width/Height**, and then click the **Set** button to fine-tune the display area so that the four green corner's residue will disappear.*

✓ ⊕ *Automatically select a window or object to be cropped by clicking and dragging the crosshair button and then positioning it on desired window/object to be cropped.*
   ■ ***Notice** how the mouse cursor has become a crosshair. As you continue to hold the mouse button depressed and move around the screen, four green corners as well as a violet rectangle would encompass the selected window/object. When the desired window has been selected, release the left mouse button.*

✓   *To create another screen crop, perform the steps again.*

✓   *To discard the just selected area, click the **Disable Crop** button.*

*Step 3. To disconnect the computer from the Seneca C-A / C-HSS / C-SHS, click the **Disconnect** button. Or, close the ScreenCrop utility.*

1. *Upon quitting ScreenCrop utility, the last crop parameters (**Left/Top/Width/Height**) which were stored either via: "Saved to Flash" button or "Send Crop" button will automatically be shown upon next start-up of the utility.*
2. *Upon restarting ScreenCrop utility and if the present screen resolution is different compared to resolution of last saved crop parameters, then the crop parameters will need to be adjusted based on the new resolution.*

2.2.5 Cropped Instances Switching

ScreenCrop utility not only provides area of interest cropping but also allows selection of two different instances which can be switched accordingly when desired. Perform the following steps for switching between two cropped instances.

*Step 1. Use the drop-down menu to select **Instance One** or **Two**, and then set the cropping parameters.*

*Step 2. Switch between the two "Instances" by clicking the **Switch Instance** button.*

Figure 2-8 Area of Interest (First/Second Instance)

2.2.6 Pan Anywhere

The "Pan" feature allows transfer of previously set crop area of interest to another portion of screen by clicking **Repeated Pan** button. Upon clicking the **Repeated Pan** button, the following dialog box will appear.
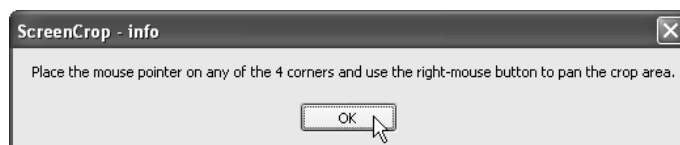

Figure 2-9 Pan Instruction

Follow the instruction in the dialog box by placing the mouse pointer on any of the four cropping corners, and then use the right-mouse button to pan the crop area.
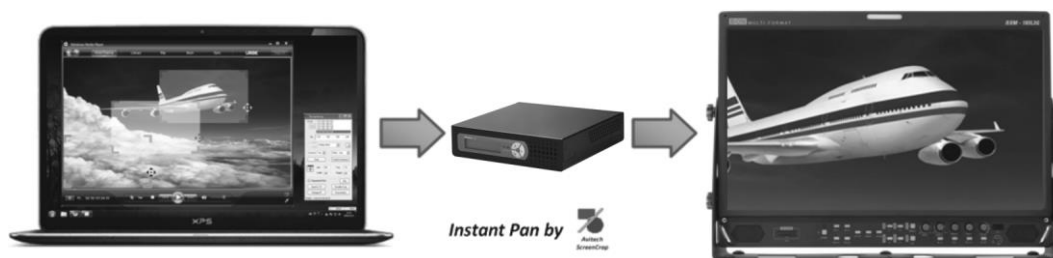

Figure 2-10 Pan Area of Interest

Appendix

The following two methods allow Seneca C-A / C-HSS / C-SHS to be in the same network mask with the connected computer.

Method 1: Change the IP Address of the Seneca C-A / C-HSS / C-SHS

Step 1. *Run ScreenCrop utility by double-clicking **ScreenCrop.exe**. Select the Seneca C-A / C-HSS / C-SHS IP address appearing in the **Devices on Network** window. Then click **Change IP**.*

*The following screen will appear showing the present IP address in the **New IP** field. The corresponding **Network Mask** and **Gateway** belonging to the present IP address is automatically displayed.*
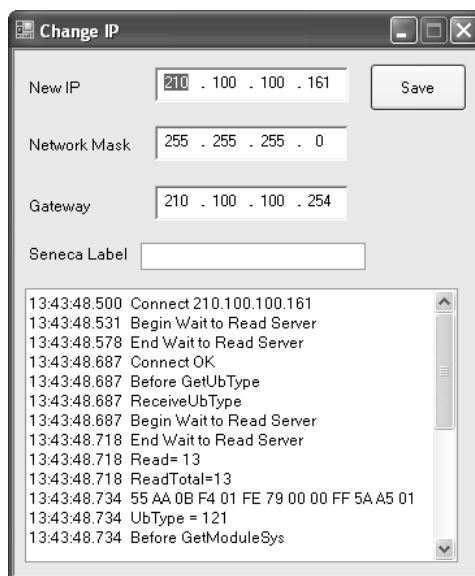
Figure A-1 ScreenCrop Utility: Change IP Screen

Step 2. *Enter the **New IP** address. Edit the **Network Mask** and **Gateway** as necessary. Then, click **Save**. The IP address will be changed for the target device (saved to flash memory of Seneca C-A / C-HSS / C-SHS).*

Step 3. *Enter the **Seneca** device **Label** if so desired. This feature allows you to attach a label to the corresponding IP address appearing in your **Devices on Network** window.*

1. This label can only be seen on your computer running the ScreenCrop utility. Any remote computer running the ScreenCrop utility can only see the IP address listed in the **Devices on Network** window without the label.
2. Upon attaching a label to a particular IP address, a text file will automatically be generated in the **Config** folder of your computer where you saved the **ScreenCrop.exe** file (e.g., 210.100.100.228.txt). A text editing program can be used to edit the label in this text file. Upon saving the changes, click the refresh button to see the new label in the **Devices on Network** window.

Step 4. *Click **Save**. The IP address will be changed for the target device (saved to flash memory of Seneca C-A / C-HSS / C-SHS).*

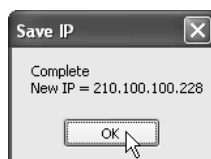*Step 5. When the next window appears, click **OK** to exit.*

Figure A-2 Save IP Screen

Method 2: Change the IP Address of the Controlling Computer

For Windows XP

*Step 1. Click **Start**, and then right-click the mouse on **My Network Places**, and click **Properties**.*

*Step 2. When the next screen appears, right-click the **Local Area Connection** icon, and click **Properties**.*

*Step 3. When the next screen appears, click to highlight **Internet Protocol (TCP/IP)**, and click **Properties**.*

*Step 4. When the next screen appears, click the radio button to select **Use the following IP address:**, and then enter the **IP address: 210 . 100 . 100 . x** (where **x** is any value from **1 – 253**), and **Subnet mask: 255 . 255 . 255 . 0**.*

*Step 5. Click **OK** to exit.*

For Windows 7

*Step 1. Click **Start** and type in **Network and Sharing Center**.*

*Step 2. Click **Change Adapter Settings** on the left.*

*Step 3. Right-click the **Local Area Connection** the Seneca is connected to and select **Properties**.*

*Step 4. When the next screen appears, click to highlight **Internet Protocol Version 4 (TCP/IPv4)**, and click **Properties**.*

*Step 5. When the next screen appears, click the radio button to select **Use the following IP address:**, and then enter the **IP address: 210 . 100 . 100 . x** (where **x** is any value from **1 – 253**), and **Subnet mask: 255 . 255 . 255 . 0**.*

*Step 6. Click **OK** to exit.*

The Seneca C-A Output Resolutions

Input Signals Tested	Output Resolution	DVI-I Port (VGA via an adapter)			
		VGA	DVI	HDMI	SDI
Composite	1080p 60	✓	✓	✓	✓
VGA (1024 x 768)	1080p 59.94	✓	✓	✓	✓
DVI (1080P 60)	1080p 50	✓	✓	✓	✓
HDMI (1920 x 1200)	1080p 30	✓	✓	✓	✓
SD-SDI	1080p 29.97	✓	✓	✓	✓
HD-SDI	1080p 25	✓	✓	✓	✓
3G-SDI	1080p 24	✓	✓	✓	✓
	1080p 23.98	✓	✓	✓	✓
	1080i 60	✓	✓	✓	✓
	1080i 59.94	✓	✓	✓	✓
	1080i 50	✓	✓	✓	✓
	1080i 24 PSF	✓	✓	✓	✓
	1080i 23.98 PSF	✓	✓	✓	✓
	720p 60	✓	✓	✓	✓
	720p 59.94	✓	✓	✓	✓
	720p 50	✓	✓	✓	✓
	720p 30	✓	✓	✓	✓
	720p 29.97	✓	✓	✓	✓
	720p 25	✓	✓	✓	✓
	720p 24	✓	✓	✓	X
	720p 23.98	✓	✓	✓	X
	SD 625	✓	X	X	✓
	SD 525	✓	X	X	✓

*Reading this table: When the Seneca's output is set to 1080P 60 the signal will be present on all of the ports simultaneously (VGA, DVI, HDMI, and SDI). When output is set to SD 525 the signal will be present only on VGA and SDI ports.

**Note: To comply with the HDCP license agreement any source with HDCP will not be converted to SDI.

***Seneca C-A was tested by viewing its outputs through a Sequoia 2H2U, a Rainier 3G, and a Seneca C-SHS.